REMARKS

This application has been carefully reviewed in light of the Office Action dated January 9, 2008. Claims 6-7 remain in this application. Claim 6 is the independent Claim. Claim 6 has been amended. Claims 1-5 are canceled without prejudice. It is believed that no new matter is involved in the amendments or arguments presented herein.

Reconsideration and entrance of the amendment in the application are respectfully requested.

Art-Based Rejections

Claims 6 and 7 were rejected under 35 U.S.C. § 102(b) as anticipated by Japanese Patent Pub. No. JP2001-310344 (Hase); Claims 6 and 7 were rejected under 35 U.S.C. § 102(b) as anticipated by Japanese Patent Pub. No. JP 10-235784 (Sugitani).

Applicant respectfully traverses the rejections and submits that the claims herein are patentable in light of the clarifying amendments above and the arguments below.

The Hase Reference

Hase is directed to a laminated sheet suitable as a flexible substrate material. The coefficient of linear expansion of the protective material is set to 100 ppm/degree C or below *(See Hase; Abstract and Paragraph 0005 and 0017)*.

The Sugitani Reference

Sugitani et al. is directed to a flexible polyimide printing circuit. Infrared and far-infrared heating at a temperature of 150 degrees C suppresses the rate of dimensional change to ± 0.05 *(See Sugitani; Abstract and Paragraph [0007])*.

The Claims are Patentable Over the Cited References

The present application is generally directed to a heat resistant flexible laminate.

As defined by amended independent Claim 6, a heat resistant flexible laminate includes a step of laminating a heat resistant adhesive material and a metallic foil by thermal lamination. A film-like protective material is disposed between a pressurized surface and the metallic foil at the time of thermal lamination. Coefficients of linear expansion of the heat resistant adhesive material and the protective material in a temperature range of 200 degrees C to 300 degrees C are within a range of $\alpha_0 \pm 10$ ppm/degree C, when a coefficient of linear expansion of the metallic foil is defined as α_0. An adhesive layer of the heat resistant adhesive material has a thermoplastic polyimide resin as a principal component.

The applied references do not disclose or suggest the features of the present invention as defined by amended independent Claim 6. In particular, the applied references do not disclose or suggest "coefficients of linear expansion of the heat resistant adhesive material and the protective material in a temperature range of 200 degrees C to 300 degrees C are within a range of $\alpha_0 \pm 10$ ppm/degree C, when a coefficient of linear expansion of the metallic foil is defined as α_0," as required by amended independent Claim 1.

On page 2 of the Office Action, the properties of heat resistance, coefficient of linear expansion and dimensional change are asserted to be necessarily present in the prior art adhesive layer, metallic foil layer, and protective material layer. However, M.P.E.P § 2112.01 states that Applicant need only show that the product does not necessarily possess the characteristics of the claimed product in order to rebut the rejection.

Applicant respectfully submits that although a material may inherently possess a coefficient of linear expansion, the material may show a structural difference by selecting a specific coefficient of linear expansion such that the same type of material

does not inherently possess the same coefficient of linear expansion. For example, thickness is a property of a material that can be claimed in a manner to show a structural difference over the same material having a different thickness. Similarly, the present invention requires a specific range of coefficient of linear expansion values to be selected that recites a clear structural difference over the prior art.

In this regard, Hase teaches that the coefficient of linear expansion of the protective material is set to 100 ppm/degree C or below *(See Hase; Paragraph 0005 and 0017)*. Again, the coefficient of linear expansion is a structural parameter and not simply an inherent property of the material.

A comparison between examples and comparative examples provided in the present Specification, is illustrative. The obtained heat resistant corresponding to the adhesive material of Comparative Example 2 exhibits a larger value in coefficient of linear expansion than that of Example 1 despite their having the same construction and composition as. Therefore using the same material does not always result in the same coefficient of linear expression.

In contrast, the present invention requires coefficients of linear expansion of the heat resistant adhesive material and the protective material in a temperature range of 200 degrees C to 300 degrees C to be within a range of $\alpha_0 \pm 10$ ppm/degree C, when a coefficient of linear expansion of the metallic foil is defined as α_0. Applicant's comparative range of coefficients between a protective material and adhesive material is clearly not shown by Hase. Thus, the structure of the present invention is not disclosed or suggested by Hase. This feature provides the benefit of preventing dimensional changes and visual defects for lamination temperatures over 200 degrees C. Furthermore, Sugitani fails to teach the claimed range of coefficient of linear expansion values and does not remedy the deficiencies of Hase in this regard.

Moreover, in thermal lamination applied to laminated materials, insulating films, a metallic foil, and an adhesive film of less than 200 degrees C, visual defects such as

wrinkling does not generally occur *(See Specification; Paragraphs [0005]-[0011])*. However, thermally fusible materials provided as the adhesive material, such as thermoplastic polyimides, usually require elevated temperatures of more than 200 degrees C. This is problematic since thermal lamination at greater than 200 degrees C causes thermal expansion and contraction that leads to visual defects and dimensional changes. Protective materials have been used to suppress wrinkling and other visual defects *(See JP 2001-310344)*, but these protective materials do not control dimensional changes caused by residual stress. However, in the present invention, by setting the coefficient of linear expansion of a protective material to be within a range of the coefficient of linear expansion of materials to be laminated, such as a metallic foil and adhesive material, both dimensional changes and visual defects are prevented for lamination temperatures over 200 degrees C.

By way of clarification and explanation, according to the present invention the relevance of coefficient of linear expansion between an adhesive material or a protective material and a copper foil, effects not only visual appearance but also dimensional change as recognized from the variety of examples and comparative examples. While Hase discloses possible scope of coefficient of linear expansion of the protective film, it does not disclose, teach or even suggest the above features of the claims of the present invention.

Additionally, Applicant respectfully points out that the protective material does not constitute the final product (the heat resistant flexible laminate) and must eventually be peeled off. Therefore even though the adhesive layer to some extent influences the final product, one of skill in the art would find it surprising that the material which eventually must be removed form the product may be argued to have affect some properties of the final product

Claims 6 and 7 are examined as a product-by-process claim without consideration of the process steps, but Applicant submits that M.P.E.P § 2113 requires,

"the structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art... where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product." In this case, amended independent Claim 6 is directed to solving the problem of dimensional change at a temperature above 200 degrees C that is necessary for laminating thermally fusible adhesive materials. This step clearly results in a distinctive structural feature, as temperatures below 200 degrees C are inadequate for laminating thermally fusible adhesive materials. Therefore, Claims 6 and 7 should be read in view of the step of heating at a temperature above 200 degrees C.

Sugitani merely discloses infrared and far-infrared heating at a temperature of 150 degrees C to suppress the rate of dimensional change to ± 0.05%. As discussed above, heating at under 200 degrees C does not produce visual defects or dimensional changes, but heating at over 200 degrees C produces much larger dimensional changes and visual defects that have not been prevented in the prior art. Therefore, Sugitani merely addresses the control of dimensional change where such changes are easy to control. Sugitani does not disclose or suggest dimensional change where the laminating temperatures are over 200 degrees C. In view of Applicant's disclosure, the dimensional change of Sugitani would almost certainly be higher than ± 0.05% at a temperature greater than 200 degrees C. Conventional solutions, including Sugitani, do not address this problem nor appreciate Applicant's solution. For this additional reason, Sugitani does not disclose or suggest the features of amended independent Claim 6.

Thus, neither Hase nor Sugitani disclose, teach or even suggest this feature of the present invention as required by amended independent Claim 6.

Since the cited references fail to disclose, teach or suggest the above features recited in amended independent Claim 6, these references cannot be said to anticipate nor render obvious the invention which is the subject matter of that claim.

Accordingly, amended independent Claim 6 is believed to be in condition for allowance and such allowance is respectfully requested.

The remaining claims depend either directly or indirectly from amended independent Claim 6 and recite additional features of the invention which are neither disclosed nor fairly suggested by the applied references and are therefore also believed to be in condition for allowance.

Conclusion

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (310) 785-4721 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
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